International Harmonized Research Activities - Intelligent Transport Systems (IHRA-ITS) Working Group Report

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ABSTRACT

The International Harmonized Research Activities Working Group (IHRA) on Intelligent Transport Systems (ITS) was established to coordinate, collaborate and exchange information on research aimed at optimizing the safety performance of ITS. This report describes some of the key activities in recent years. The working group has also started to publish a IHRA-ITS newsletter through INRETS that describes these research activities. The working group continues to pursue seven priority research topics. This group recently offered to support the UN-ECE World Forum for the Harmonization of Vehicles (WP 29) Informal Group on ITS in their efforts to establish a common understanding of new in-vehicle ITS technologies and to exchange information. In the next year, this working group will brief the WP.29 ITS informal group on a number of key safety issues for ITS. In sum, the IHRA-ITS working group continues to be an effective forum for international harmonized research on ITS safety.

BACKGROUND

At the ESV conference held in Melbourne, May 1996, the Government Focal Point Committee developed an International Harmonized Research Agenda (IHRA). The need for collaborative research in Intelligent Transport Systems (ITS) was identified as a high-priority research area, in recognition of the rapid advances in related technologies and their considerable potential to influence motor vehicle safety. Canada was identified as the lead country for this activity and tasked with coordinating harmonized research in ITS.

The primary goal of harmonized research in ITS is to develop test procedures to assess driver-vehicle interaction as a means for determining the safety potential of ITS crash avoidance and driving enhancement for in-vehicle systems. The scope of the research program in ITS was defined and limited by emphasis on three key elements:

1. Government orientation: The research is intended to support the needs of governmental authorities with responsibilities for establishing vehicle safety regulations, promulgating national standards, and for related programs requiring national leadership. The ultimate aim is to develop the scientific basis for internationally harmonized regulations in this area.

2. Safety Evaluation: The main focus of the research is to foster ITS technologies which will have a positive influence on motor vehicle safety. It is anticipated that the research will lead to a) the identification of vehicle-based technologies which can be used for the prevention and mitigation of traffic collisions, and b) the development of regulations that will inhibit technologies which are likely to have an adverse affect on safety. ITS technologies are evolving rapidly and neither design nor performance criteria can adequately address the safety assurance requirements of systems for which the underlying technologies and functionality are constantly changing. For this reason, there will likely be an increasing need for prospective techniques for evaluating system safety in the development and certification of ITS vehicles.

3. Driver-ITS interaction: The collaborative research will emphasize crash avoidance interventions and focus on developing methodologies for assessing the safety of driver-ITS interaction as a means to minimizing the risk of collision. The human-machine interface is arguably the most critical element of the system since the vast majority of crashes involve human errors. The ergonomics of the interface and human factors underlying driver-vehicle interactions are paramount to the realization of the full safety potential of ITS technologies. Conversely, unless the interface is designed to support the driving task and take into consideration driver capabilities and limitations, its impact on safety can be highly negative. Hence, driver-ITS

interaction represents an area in which collaborative research can identify important opportunities for developing internationally harmonized safety interventions which are not unduly hampered by incompatible, pre-existing strategies.

Participation

The following countries have actively participated in the ITS WG throughout its history: Canada, France, Germany, Japan, Sweden, the United Kingdom and the United States, We have also had participation on occasion from Poland, Australia, and The Netherlands. While most WG members represent national governments some members come from the automotive industry. In certain cases, notably France, Germany and Japan, the national representatives come from industry or government research organizations and participate on behalf of the relevant government agencies.

The ITS working group has had two meetings per year on average. The most recent meetings were in:

November 20-21, 2003, Madrid, Spain
June 24-25, 2004, Paris, France
October 22, 2004, Nagoya, Japan
February 17, 2005, Brussels, Belgium

The following people attended our last meeting in Brussels:

Peter Burns, Chairman, Transport Canada
Christhard Gelau, BASt, Germany
Ruggero Ceci, SRA, Sweden
Åsa Gustafsson, SRA, Sweden
August Burgett, NHTSA, U.S.
Kaneo Hiramatsu, JARI, Japan
Annie Pauzié, INRETS. France
Chris Ward, DfT, UK
Maxime Flament, Ertico, Belgium

The minutes from most of these meetings are posted on the IHRA website: www-nrd.nhtsa.dot.gov/IHRA.

RECENT ACTIVITIES

A group of international ITS safety experts identified priority research areas for the IHRA-ITS group at a workshop in Washington DC in 1999. The working group lead research, exchanges research information and conduct collaborative work on these topics. Some recent activities are described below according to these priorities.

Project 1: Development of a Harmonized Safety Evaluation Methodology Framework

The objective of this project is to develop a Harmonized Safety Evaluation Methodology Framework for in-vehicle information, control, and communication systems with respect to human performance and behaviour. There are several activities that fit under the umbrella of this priority project.

Dr. Pauzié (INRETS) described some European activities relating to this priority. AIDE - adaptive integrated driver–vehicle interface is a European integrated safety project. Integrated projects are a research tool in the European 6th Framework Program. This 4 year research program will include work on developing evaluation tools for assessing the safety if ITS. Volvo Technology is the project leader for AIDE (www.aide-eu.org).

HUMANIST is a European network of excellence concerned with the human-centred design of ITS technologies. These networks are another European research tool. The consortium has 22 partners from 14 difference countries that make up a “virtual research centre” performing a joint program of activities. Task Force E in this network is concerned with the development of methodologies for assessing the safety of ITS. The IHRA-ITS WG was identified as an important contact for the exchange of information with the HUMANIST consortium. Although there are no funds dedicated for research, there is money to support dissemination and integration activities (www.noehumanist.org).

ITS Europe conference in Budapest 2004, had several sessions dedicated to evaluation methodologies (www.itsineurope.com/its_pres.cfm). WG member Dr Burgett (US DOT) presented a basic computational framework for assessing the safety impact of new technologies at this conference. The framework considers the socio-economic benefits which can be obtained by the introduction of ITS. The safety assessment is based on estimates of the impact ITS has on crash prevention and exposure.

INRETS have also drafted a list of evaluation measures. The WG has commented on these measures and the list will be developed further.

This WG has several partners in the European research project HASTE (Sweden, Canada,

Netherlands and UK). The aim of HASTE (Human Machine Interface And the Safety of Traffic in Europe) is to develop methodologies and guidelines for the assessment of in-vehicle information systems (www.its.leeds.ac.uk/projects/haste/research.htm). Project HASTE involves the cooperation of eight partners (7 European and 1 Canadian TC) in a concerted effort to address this issue. The final experiments in this 3-year project have been completed. The project will be wrapping up early in 2005 with only some final analyses, meetings and reports remaining. Transport Canada and the other project partners recently assessed two available aftermarket information systems using the HASTE performance measures. A workshop was held in Brussels on March 22, 2005 to present the results of the project and what was learned.

The Collision Avoidance Metrics Partnership (CAMP) in the U.S. has one research project concerned with driver workload metrics. There was a joint research meeting between the U.S. project CAMP and European project HASTE in June 2004 to discuss methods and results.

Data collection in two field operational tests, the heavy vehicle rear-end crash warning system and the light vehicle rear-end crash warning system, has been completed in the U.S. and analysis of the data has begun. Analysis of these data and estimation of the safety impact will be completed by the summer of 2005. Work on development of standardized approaches for predicting safety benefits continues to make progress.

Transport Canada is conducting a series of small studies to follow on from the HASTE research. A study was conducted to build on the efforts of a German consortium in the ADAM (Advanced Driver Attention Metrics) project.[1] ADAM was a German research project funded by DaimlerChrysler and BMW and was looking into similar issues as CAMP and HASTE. A principle deliverable from the ADAM project was the lane change test (LCT), which is a relatively simple and low cost standardized test scenario. The LCT requires drivers to repeatedly perform lane changes when prompted by road signs while driving a simple desktop driving simulator. The amount of distraction due to the additional demands of secondary task performance is evaluated according to lane change quality relative to a normative model. Early results show that the LCT is sensitive to both visual and cognitive distraction.[1]

Early indications of the LCT's potential as a practical and effective measure of driver distraction has raised its profile, particularly within the automotive industry.[2] The procedure is now being further developed as a draft ISO standard.[3] Despite the interest, there is little published research available on the procedure. In addition, the procedure is still under discussion and may be modified.

A Transport Canada study was conducted to learn more about the LCT. The LCT technique was applied to four destination entry tasks on an aftermarket navigation system. The experimental set up included a steering wheel, foot pedals, monitor, computer and navigation system, all off the shelf. The results indicated that the LCT is a sensitive measure of driver distraction. The participants showed greater mean deviation in lane change path when driving while performing a secondary task (i.e., calibration and navigation tasks) than when driving without performing a secondary task (i.e., baseline). The next step will be to compare the results of this study the HASTE project, which ran multiple studies on the same set of navigation tasks using a variety of driving performance metrics. Transport Canada plan to assess the same tasks using the Occlusion test in the next few months.

Project 2: Driver Understanding and Expectation of ITS Systems: Identification and Measurement of The Effects of False Expectation of Driver Performance

The purpose of this project is to identify factors that affect a driver's understanding of ITS system functional characteristics and determine how they develop performance expectations for these systems. In particular, the main objective is to assess the safety consequences of mismatches between driver expectation and system performance.

There is a new U.S. project called " Real World Effectiveness of Advanced Technologies" that started in Sept. 2003. The project will identify and interview "early adopters" who have purchased vehicles equipped with ITS, such as Adaptive Cruise Control, navigation and night vision systems. The project has utilized mail-outs, newspaper advertisements, internet advertisements, magazine advertisements, and incentive mail-outs. Analysis of these data is not yet complete.

Dr. Flament (Ertico), as part of the liaison activities within the European Integrated Project PReVENT, described the EC 6th Framework integrated project on active safety at our last working group meeting. The subproject Response 3 is particularly relevant to this priorty (www.prevent-ip.org).

Project 3: Human Factors Principles Checklist For In-Vehicle Systems

The purpose of this project is to develop a checklist based on human factors principles to be used in the safety evaluation of in-vehicle systems.

C. Patten (SRA) described plans in Sweden to further develop and evaluate the assessment checklist developed by the Transport Research Laboratory (TRL) in the UK. The checklist is also being further developed at TRL as part of the Primary New Car Assessment Program (PNCAP). The EU is now planning to increase the scope of the assessment procedure by incorporating primary safety considerations (braking, lighting, visibility, handling and ergonomics). This may be a potential opportunity for some collaboration.

Project 4: Normative Data On Naturalistic Driving Behavior

The purpose of this project is to characterize driving behaviour in realistic situations by developing a driving performance database which comprises data on normal driving behaviour, in-vehicle ITS system usage, safety critical events, and crash data. Naturalistic driving means unsupervised driving on public roads.

Dr Burgett described progress on NHTSA's 100 Driver Naturalistic Driving Study. This project collected data from 100 vehicles equipped with data collection systems. Data collection is complete and preliminary analysis has been completed. These data will provide a strong foundation of basic driving behavior and likelihood of various events and types of crash occurring as well as providing data on the level of driver attention before crashes or near-crashes. The relationship between driver workload metrics and level of safety will be one focus of the analyses. Data from this research will generally be available to others for additional analyses.

Project 5: Simulator Reference Test Scenarios

The goal of this project is to develop a catalogue of driving scenarios for use in driving simulator research. The set of scenarios should encompass the breadth of driving possibilities from uneventful everyday situations to safety critical situations.

An IHRA Driving Simulator Scenarios workshop that was held in conjunction with the Driving Simulator Conference - North America (DSC-NA, 2003). The goal of this workshop was to develop a catalogue of driving scenarios for use in driving simulator research. The workshop was considered to be beneficial although it was only a small first step towards achieving the goals of this priority project. Material from the workshop was posted on the IHRA-ITS WG web page.

One recent U.S. project has replicated a test-track experiment using the National Advanced Driving Simulator (NADS). The purpose of this validation study is to provide data from which driver performance in a vehicle can be compared to driver performance in a simulator. The results of this testing show that the level of correlation depends on several factors, including level of braking. For example, simulator steering onsets are not as aggressive as closed-course conditions. Another finding was that there was better correlation for those conditions that produce noticeable looming. The final report of this project is in preparation.

There are an increasing number of initiatives currently underway on this topic. The Canadian Automobile Research Simulation (CARS) network funded by AUTO21 is investigating in-vehicle and related ITS technologies. There was a panel on Critical Issues in Simulation Methods and Measures at the upcoming meeting of the Human Factors and Ergonomics Society. The TRB Simulator Users Group is also very active in this area (www.uiowa.edu/~neuroerg/) and there are routine discussions of test scenarios at the annual International Driving Simulator Conferences (DSC). The next North American meeting will be held in Orlando in November, 2005.

Project 6: Improved Secondary Task Methodology For Evaluating Safety Effects of Driver Workload

The goal of this project is to develop a useful secondary task methodology to calibrate workload effects of combining in-vehicle and out-of-vehicle information.

There are a considerable number of international research projects underway on this topic. Joint research by Japan (JARI), Germany (BASt), and Sweden (SNRA) has been performed on this topic. A report has been completed summarising a portion of this joint research and this will be published in the journal Transportation Research, Part F. National research activities are also underway in Canada, France, Japan, Sweden and the U.S among others.

Project 7: Harmonization and Validation Of Surrogate Safety Measures

The goal of this project is the harmonization and validation of surrogate safety measures. Surrogate safety measures are measures that can be used to estimate numbers of crashes and resulting injuries and deaths.

The U.S. is investigating one method that uses range/rate diagrams to crash prevention boundaries for defining a level of risk. Several field operational tests are also under way.

NATIONAL REPORTS

This section documents other relevant ITS safety research activities from each member's country that may not fit specifically within the priority activities.

Japan

Dr Hiramatsu (JARI) distributed ITS Japan's new journal entitled International Journal of ITS Research. The first issue was published in December 2003 (www.its-jp.org/english/).

There was a recent change in Japan's legislation/ enforcement - "the usage of mobile phone in hands as well as the gaze at display equipment during driving are prohibited and punished. This law was set in 1999, and its strict application has started since 2004 Nov." "the number of traffic accidents with regard to mobile phone increased double in 2003 compared in 2000." www.npa.go.jp

The Japanese Automobile Manufacturers Association recently released a new version of the JAMA guidelines for in-vehicle display systems. Version 3.0 of the JAMA guidelines incorporates performance criteria. The basic intent is that in-vehicle informations systems be designed not to have an adverse effect on safe driving. The new performance criteria set limits on visual distraction. The operation of a display is prohibited if the task requires a total glance time in excess of 8 seconds. Using the Occlusion method, the total shutter open time shall not exceed 7.5 seconds.

France

Dr Pauzié (INRETS) described some relevant French and European activities (www.arcos2004.com). ARCOS is a pre-competitive research project that aims at improving road safety. It considers vehicle, driver and road as a whole system. The project aims at enhancing driving safety on the basis of four safety functions: controlling inter-vehicle distances; avoiding collisions with fixed or slowly moving obstacles; avoiding lane exit; and alerting other vehicles of accidents.

Dr Pauzié described how speed enforcement has gained some support in France and distributed a brochure from the PROSPER project on Intelligent Speed Adaptation (www.prosper-eu.nl).

ECTRI, the European Conference on Transportation Research Institutes, is an association to actively promote the cooperation of surface transport research in European (www.ectri.org).

Sweden

C. Patten described the research work mobile phones and subsequent enquiry. A recent decision was made in Sweden not to ban hand-held cell phones. This was based on the research findings that concluded hands-free phones are no less distracting than hand-held phones.

The Swedish SafeTE project is continuing to look at subjective and objective evaluations of the safety of in-vehicle information systems (IVIS) and advanced driver asssistance systems (ADAS). The techniques of interest include: checklist, peripheral detection task (PDT) and visual performance indicators. The checklist focuses on an expert evaluation of driver-system interaction, for example interface design, system feedback, semantic content and compliance with regulations and standards. The PDT testing, with visual and tactile stimuli, has been completed and analyses are underway.

A Swedish program called IVSS (intelligent vehicle safety systems initiative) started in 2004 to support

industry cooperation and promote ITS safety. There are 7 R&D program areas within the Swedish Intelligent Vehicle Safety Systems (IVSS) program, HMI is one of these areas. Further details are available from the following link: http://www.pff.nu/Main.aspx?ObjectID=59d6e9b2-93bf-459e-9b09-b2daaa5c5d6b The SRA is directly involved in two different projects on driver impairment monitoring. One concerns driver drowsiness and the other concerns drugs. Both are focusing on specific sensors to detect impairment, e.g., eye-tracking cameras. The major tasks are to find test regimes and methodologies for evaluation and deployment.

Canada

Transport Canada is conducting an assessment of the Alliance of Automobile Manufacturers (AAM) Statement of Principles. This project aims to evaluate compliance of advanced in-vehicle information and communication systems to the AAM principles. The AAM has been developing principles to address the safety aspects of driver interactions with future telematics systems. Their statement of principles document was developed by consensus with industry stakeholders and continues to evolve. The document outlines principles that must be followed to improve the safety of driver interaction with telematics systems and stipulates performance criteria and verification procedures. The principles from this document were largely based on the European Commission recommendations of December 21, 1999. The results of these voluntary industry principles will apply to vehicles with design freezes after 2006. Although this initiative promises to improve the safety of these systems, there is some uncertainty as to the level of safety and effectiveness of the AAM procedures and criteria. Thus, there is a need to thoroughly evaluate the AAM's 24 principles and to measure the compliance of current in-vehicle devices to these principles as a benchmark for change. Furthermore, there is a need to evaluate whether the verification procedures are explained in sufficient detail to be applied effectively.

In-vehicle information and communication systems, also known as telematics systems, from four leading manufacturers will be evaluated according to the most recent guidelines from the AAM document "Statement of Principles, Criteria and Verification Procedures on Driver Interactions with Advanced In-Vehicle Information and Communication Systems". Results will provide insight into how the current automotive industry standard for telematics systems rate on these new criteria. The project will also independently assess the value of these industry guidelines and use these results as benchmark data on which to assess the safety developments of future telematics systems.

This work will provide essential input into the Memorandum of Understanding (MOU) that is currently being negotiated with the automotive industry (see below). Part of this MOU concerns the AAM principles and we need to know the value of these principles prior to making any endorsement of certain principles. The proposed project is divided into 2 phases, to be carried out over a two-year period. The first phase (to be completed in March 2005) consisted of measuring four in-vehicle systems and assessing their compliance to AAM principles for which verification procedures do not require dynamic testing. The second phase will involve dynamic testing of the same devices used in Phase 1. The dynamic testing of the devices will consist of experiments conducted according to verification procedures outlined in the most recent version of the AAM principles, which is anticipated for Spring 2005. Both phases will also evaluate the validity and reliability of the AAM verification procedures.

Transport Canada consulted with the public and industry stakeholders in 2003-04 to identify potential initiatives for limiting the problem of driver distraction from in-vehicle devices (http://www.tc.gc.ca/roadsafety/tp/tp14133/en/menu.htm). TC investigated public opinions on this issue using a survey and focus group discussions. Stakeholders' comments were received on the discussion document in September 2003 and meetings and workshops were held with industry and provincial stakeholders to discuss strategies. These consultations indicated that a MOU with the automotive industry was widely viewed as the preferred strategy. The purpose of this MoU between TC and the automotive industry would be to set out the general terms and conditions with regard to limiting driver distraction from in-vehicle telematics devices. The parties to Transport Canada's proposed MOU would recognize and acknowledge:

- that distraction is a safety problem and that in-vehicle telematics devices should be designed to minimize their potential to distract drivers.
- that there are currently no performance criteria that have been proven effective in minimizing distraction across a range of technologies

- that there are general guiding principles that can help designers limit distraction
- that the most appropriate approach towards addressing the safety concerns associated with telematics is for manufacturers to develop corporate policy (processes) to ensure that driver-vehicle integration considerations are addressed, consistent with the basic principles

Negotiations on the terms of this MOU are currently underway with the goal of reaching an agreement by early 2006.

Another Transport Canada project is investigating and developing methods for assessing the performance of safety critical in-vehicle warnings. This work will investigate and assimilate the research on measuring the performance of warnings. Although the main focus will be automotive warnings, this project will also provide a survey of what can be learned from other applications (e.g., air) and applied to the automotive realm. Criteria such as conspicuity, perception and reaction time, response type, appropriateness of response, signal detection (false alarms, hits, misses, rejections) and annoyance levels will be considered. Early in 2005, a review of the current state of the literature on warnings was conducted. The next step will be to apply selected to performance measures to a set of automotive warning systems to evaluate the effectiveness of the procedures and criteria.

Lastly, Transport Canada is investigating ITS and speed management. The aim of this project is to develop an understanding and quantify the effects of technical measures to control vehicle speeds in traffic in terms of their potential impact upon collisions and injuries, traffic speeds and congestion, and reductions in greenhouse gases (GHG). Reducing speed could be a practical way to reduce GHG emissions and excess speed is an acknowledged road safety problem. Technology is now available that allows vehicle speeds to be automatically restricted based on current road characteristics, traffic, and even weather data. For example, Intelligent Speed Adaptation (ISA) is an on-board system that regulates the speed of motor vehicles in traffic according to their location on the road network. The potential for ISA and other strategies for improving safety and reducing greenhouse gas emissions in Canada needs to be investigated.

The main activities on this project are: 1) literature review, 2) ISA demonstration and evaluation, 3) fuel consumption tests, 4) fuel consumption display demonstration and evaluation, 5) investigation of speed attitudes & behaviour, 6) modelling & simulation and 7) infrastructure based speed strategies. A demonstration vehicle was built and an international workshop was held in Ottawa on March 8-9, 2005 to plan the Canadian evaluation of ISA in 2005-06. This will eventually be followed by a field operational test of ISA.

Germany

Dr Gelau described some ongoing research at BASt on the measurement of driver workload when driving a motorcycle. They are assessing navigation on motorcycles, and also looking at older drivers needs from ADAS. BASt are also in the process of building a new research facility in Cologne for ergonomics and road safety.

U.S.A.

Among other developments in the U.S., Dr Burgett described the restructuring of the ITS program in the US DOT. The IVI program will cease to exist towards the end of 2004 and will be replaced by these new ITS research initiatives outlined at this link: www.its.dot.gov/press/initiatives4.htm

Harmonization of Vehicle Regulations

The United Nations Economic Commission for Europe's (UNECE) working party 29 is a World Forum for Harmonization of Vehicle Regulations (WP.29). An informal group was established within WP.29 in 2002 to discuss Intelligent Transport Systems and the implications this technology has for automotive safety and regulations. The ITS Informal Group assumes the role of a strategic group for supporting the development of new technologies for enhancing safety, works to expand the knowledge of these technologies, develops a common understanding of them and discusses the course of their handling in the regulatory framework if necessary.

Dr I. Noy (Transport Canada) addressed the AC.2, Administrative Committee, and WP.29 with respect to the work of this WG. The principal objectives were to introduce WP.29 to the challenges posed by ITS and to recommend that WP consider how ITS-

related activities might be integrated into its work program. It was also proposed that the IHRA-ITS WG provide research support to WP.29 on ITS safety issues. A recent proposed Terms of Reference from Japan for the WP.29 ITS informal group suggested collaboration between the two groups. IHRA-ITS WG members discussed this proposed collaboration at our last meeting. All members agreed that this WG is well suited to support WP.29.

The IHRA-ITS working group extended an offer to support the WP.29 ITS Informal Group on their proposed short term tasks of: 1) developing a common understanding of driver assistance and 2) information exchange. The chairmen of both groups discussed this proposal at a meeting in Nagoya in October, 2004. Mr Wani (MLIT), Chairman of the WP.29/ITS Informal Group, indicated at this meeting that it would be useful to have two-way communication between the groups. The WP.29/ITS Informal Group would benefit from the views and information about research activities from IHRA/ITS WG. On the other hand, discussions in WP.29/ITS Informal Group are beneficial for IHRA to consider its directions of its research activities.

As a starting point, it was suggested that WG members make presentations to the ITS Informal Group on several leading research issues in ITS. Dr Hiramatsu (JARI), representing IHRA, made a presentation to WP.29 in November 2004 in Geneva explaining our proposed contributions. He explained to the informal group the issues affecting Human-Machine Interaction and provided statistics from Japanese studies demonstrating the effect that Human factors can have on fatal and serious injuries. He demonstrated by means of block diagrams how these fit together and how information overload needs to be considered as part of the development programme (see Figure 1 and Tables 1 & 2). A hierarchical system of warning is needed and should be integrated with the timing and type of system/warning. For vehicles control, then issues such as convenience and severity reduction were important.

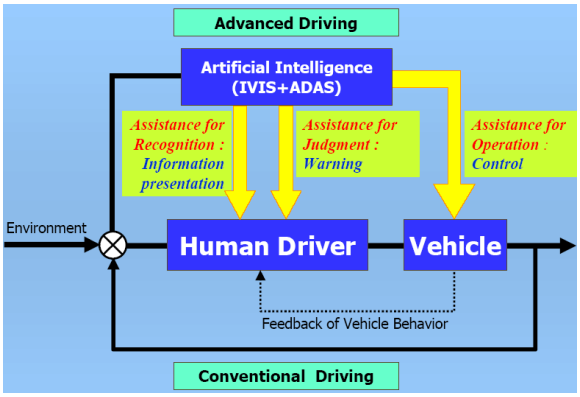

Figure 1. Block Diagram of Driving Behaviour

Table 1.
Behavioral Model of a Driver and Level of Driver Assistance.

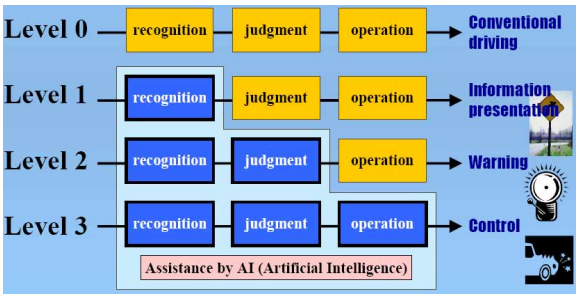

Table 2.
Classification of Advanced Systems according to Level of Driver Assistance.

level of driver assistance		examples of advanced systems
Level 1	information presentation *(To assist recognition)*	/ Navigation system / Adaptive front-lighting system / Night vision / Information on road curve
Level 2	warning *(To assist judgment)*	/ Forward collision warning / Lane departure warning / Side obstacle warning
Level 3	control:active braking, steering *(To assist operation)*	/ Adaptive cruise control / Collision mitigation braking system / Intelligent speed adaptation / Lane keeping support system

The following contributions and schedule was agreed at our last WG meeting in Brussels.

1. Dr Christhard Gelau (BAST) and Dr Annie Pauzié (INRETS) will present a comparison of the EU statement of Principles, AAM Guidelines and JAMA requirements to WP.29 at the 136th meeting in Geneva in June, 2005.
2. Dr Peter Burns (Transport Canada) will report on driver distraction research in

North America requirements to WP.29 at the 137th meeting in Geneva in November, 2005.

3. Dr Hiramatsu (JARI) will present the issues on automation and the idea of "Driver in the Loop" to WP.29 at the 138th meeting in Geneva in March, 2006.

Newsletter

INRETS was given some funding from the French Ministry of Transport to support IHRA-ITS activities. This funding has been used to support a newsletter that reviews this WG's activities. The newsletter will be in French and English and will be placed on the WG's and INRETS website. The first issue has been completed and the second issues is now being prepared.

SUMMARY

In sum, the IHRA-ITS working group continues to be an effective forum for international harmonized research on ITS safety. As ITS is becoming more prevalent in the field and is under intensive development, this working group is now conducting a strategic review of its organization and research prioirities.

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